ENGINEERING OPERATIONS COMMITTEE
MEETING MINUTES
NOVEMBER 6, 1997, 9:00 A.M.
EXECUTIVE CONFERENCE ROOM

Present:	J. D. Culp	C. Roberts	P. F. Miller
	P. Schafer	J. D. O'Doherty	E. Savas
	J. W. Reincke	T. Fort	G. Etelamaki
Guest:	S. Bower	D. L. Smiley	

OLD BUSINESS

1. **Approval of the Minutes of the August 7, 1997, Meeting - C. T. Maki**

   Minutes of the August 7, 1997, meeting were approved as written.

2. **Update on Warranty Specification - J. D. Culp**

   A draft summary of the Pavement Warranty Specifications, being developed in partnership with the industry, was presented for discussion. The development of warranty specifications is predicated on the passage of new legislature (Enrolled Senate Bill 303 of the 89th Legislature of Michigan, 1997) mandating the use of a warranty "where possible" to cover contracted state trunkline work.

   The EOC direction is that the department needs to gain experience with these warranties over some period of time to avoid possible pitfalls and to determine what "is possible". Several other states already have experience with Warranty Specifications and their current practices are being evaluated.

   Only a few pilot warranty projects should be proposed for 1998 involving both bituminous and concrete pavement construction.

   ACTION: The Construction and Technology Division will take the lead in further developing warranty specifications. J. D. Culp will report back to the EOC on progress and with recommended 1998 pilot projects for approval.

NEW BUSINESS

1. **Pavement Selection Discussion - P. F. Miller/S. Bower**

   The new legislation referenced in Old Business, Item 2 (Enrolled Senate Bill 303), also has an effect on the pavement selection process and actions required by the EOC. The legislation states that all projects with paving costs greater than $1 million will use life cycle cost analysis (LCCA) to determine pavement selection. User-delay costs must also be included in the analysis. Traditionally, life cycle cost analysis has only been done on projects that had pavement costs greater than $1 million when the service life of the fix was 20 years or more.

The new policy will require a life cycle cost analysis to determine pavement selection on a significantly larger percentage of the department's highway program. The increased number of projects requiring the analysis, along with the inclusion of user-delay costs, will require that considerable more staff time be devoted this task. The department also has determined that pavement selection must occur in the scoping phase in order to minimize design plan changes.

Tom Fort, FHWA, indicated concern that the department is letting life cycle cost analysis drive the pavement selection process. FHWA has always recommended using LCCA as a tool in determining pavement selection. However, their view is that it should only be a contributing factor to the decision because of the statistical variability of LCCA inputs.

ACTION: The Pavement Selection Review Committee will develop the necessary revisions to the life cycle books to meet the requirements of the legislation. EOC will be supplied this information for review and approval at a future date. A list of Pavement Management Definitions will also be attached to the minutes.

2. **Raised Pavement Marker (RPM) Program - J. D. Culp**

The use of raised pavement markers continues to increase. This year's construction van tour witnessed a continued lack of maintenance with most installations over two years old being poorly maintained. After going through only one winter, between 30-50 percent of the rpm lenses are missing or severely damaged due to snow plowing operations. The recommendation is that the department cease new rpm installations until it can be demonstrated that they can be maintained properly. No manufacturer has a casting or a lens they are willing to warrant performance on due to Michigan's snow plowing practice.

ACTION: The Traffic and Safety Division is to make a recommendation on the future direction of the raised pavement marker program at the January EOC meeting.

(Signed Copy on File at C&T/Secondary)
Jon W. Reincke, Secretary
Engineering Operations Committee

JWR:kat
Attachments
cc: EOC Members
District Engineers

J. R. DeSana	R. J. Risser, Jr. (MCPA)	T. Adams (MCA)	B. Richter
R. J. Lippert, Jr.	A. C. Milo (MRBA)	J. Ruszkowski	R. D. Till
D. L. Smiley	J. Becsey (MAPA)	C. Libiran	S. Bower
L. E. DeFrain	G. L. Mitchell	G. J. Bukoski	C. W. Whiteside
M. Frierson	M. Newman (MAA)	J. Steele (FHWA)	K. Rothwell

M. Nystrom (AUC)

PAVEMENT MANAGEMENT DEFINITIONS

Preventive Maintenance Fix (Short Term Fix) - A preventive maintenance fix is defined as a fix that is designed to last 10 years or less.

Minor Rehabilitation (Medium Term Fix)- A minor rehabilitation is defined as a fix that is designed to last between 10 and 20 years.

Major Rehabilitation (Long Term Fix) - A major rehabilitation is defined as a fix that is designed to last 20 years or more.

Reconstruction (Long Term Fix) - A fix that removes and replaces the entire pavement structure. Sometimes the sand subbase may be left in place and used for the new pavement structure. Reconstruction fixes are designed for 20 years or more.

Remaining Service Life - The life remaining in a pavement before a major rehabilitation or reconstruction is the most cost effective fix to apply.

Poor Pavement - Pavements that have a Remaining Service Life of seven years or less.

Distress Index - An index that quantifies the level of distress that exists on the pavement network based on 1/10 mile increments. A Distress Index of 50 or greater equates to a Remaining Service Life (RSL) equal to zero. Distress Index values of 0 to 50 have corresponding RSL values greater than zero.

Ride Quality Index (RQI) - An index that quantifies the ride quality that exists on the pavement network based on 1/10 mile increments. A RQI of 70 or greater equates to a RSL equal to zero. RQI values of 0 to 70 have corresponding RSL values greater than zero.

Fix Life - The expected life of the fix excluding the effects of future preventive maintenance work on the project.

Design Life - The length of time that the pavement section is expected to last without any future scheduled maintenance.

Analysis Period (Service Life) - The life that can be expected from a major rehabilitation or new/ reconstruction when appropriate future maintenance is performed.

Remaining Service Life (RSL) Categories Used in RQFS

Poor Pavements (Sufficiency = 4.0 to 5.0)

Category I . . . . . RSL = 0-2 Years
Category II . . . . . RSL = 3-7 Years

Fair Pavements (Sufficiency = 3.0 to 3.5)

Category III . . . . . RSL = 8-12 Years
Bottom 33 Percent Category IV . . . . . RSL = 13-17 Years

Good Pavements (Sufficiency = 1.0 to 2.5)

Top 67 Percent Category IV . . . . . RSL = 13-17 Years
Category V . . . . . RSL = 18-22 Years
Category VI . . . . . RSL = 23-27 Years
Category VII . . . . . RSL = 28-32 Years

Note: RQFS reports network condition by the percentage of network **lane-miles** in each RSL category.

Preventive Maintenance - Preventive Maintenance is a planned strategy of cost-effective treatments to an existing roadway system and its appurtenances that preserves the system, retards future deterioration and maintains or improves the functional condition of the system without (significantly) increasing structural capacity.

Examples of preventive maintenance include bituminous crack sealing, chip sealing, micro-surfacing, concrete joint resealing, concrete crack sealing, thin bituminous overlays, diamond grinding, full depth concrete repairs, and dowel bar retrofit.

Reactive Maintenance - Reactive Maintenance is activities that must be done in response to events beyond the control of the department. Some events require response as soon as possible to avoid serious consequences because a present or imminent danger exists. Reactive maintenance cannot be scheduled because they occur without warning and often must be immediately addressed. Frequently, demand maintenance activities are performed all hours of the day or night and on an overtime basis.

Examples of reactive maintenance activities include snow plowing, pothole patching, removing and patching pavement blowups, unplugging drainage facilities, replacing a regulatory sign knocked down by traffic, removing tree limbs and branches fallen on the pavement, and responding to a road closing because of flooding.

Routine Maintenance - Routine maintenance is the day-to-day maintenance activities that are scheduled or whose timing is within the control of maintenance personnel.

Examples of routine maintenance activities include mowing and cleaning roadsides, cleaning ditches, sealing cracks in the pavement, painting pavement markings and pruning trees.

Updated
11-5-97